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1863 e. 225

1863 e. 225

INSTITUTE OF BRITISH ARCHITECTS.

QUESTIONS

UPON VARIOUS SUBJECTS

CONNECTED WITH

ARCHITECTURE,

SUGGESTED FOR THE

DIRECTION OF CORRESPONDENTS AND TRAVELLERS,

AND

For the Purpose of Eliciting

UNIFORMITY OF OBSERVATION AND INTELLIGENCE IN THEIR COMMUNICATIONS TO THE INSTITUTE.

USUI CIVIUM, DECORI URBIUM.

LONDON:
G. WOODFALL, ANGEL COURT, SKINNER STREET.
1835.

COUNCIL

FOR THE YEAR 1835-36.

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ADDRESS.

ONE of the principal purposes, for which the Institute of British Architects has been established, is that of collecting information of every kind connected with Architecture. This is an object, however, to which the attention of those, who are engaged in the pursuit, has not been hitherto specifically drawn. With the view, therefore, of producing an uniformity of operations to the investigations of those, who may be disposed to further the intentions of the Institute, the Members have considered it due to their friends and well-wishers to authorize their Senior Secretary to compile a series of Questions, embracing most of the points connected with the practical departments of Architecture, for the purpose of publication and distribution; so as to suggest to Correspondents the kind of information, which may most materially promote the end they have in view.

The Members appeal to their professional Brethren, whether at home or abroad, to assist them in this important object: and invite all persons, connected in any way with construction, as well as those who take delight in Architecture, to contribute any information, which they may have on the subject. A few lines may sometimes convey suggestions of more importance, than a communication of as many pages, and may give rise to investigations of the most interesting character. Those, therefore, who may be in possession of any such facts, are requested not to be deterred from forwarding notices, however brief, which may be of service to the profession. The Members do not expect complete and exact information from an individual on all or even any one point — they will in effect value a single fact,

which may contribute to elucidate any obscurity connected with the history, theory, or practice of Architecture, or tend to promote the cultivation of any branch of the subject. An aggregate of such contributions may in many cases produce a mass of facts sufficient for every practical purpose. As they propose to publish a Journal of their proceedings, as soon as they have sufficient materials, it will of course be important to give weight to the authenticity of all their communications, by acknowledging the source from which they may be derived: at the same time, the Council must necessarily exercise a discretion of doing so, according to the use made of the information furnished.

The various heads, under which the following queries are classed, although very numerous, do not comprehend all the *desiderata*, which the vast subject of this branch of science includes. Still it may be supposed by some, that the range here taken is too wide, and greater than can be justified. But it should be remembered that claim is not made to all the erudition, knowledge, skill, and science, which Vitruvius lays down as necessary to qualify an Architect for his important profession. The very subjects themselves, which are suggested as proper themes for research in the following queries, are such as arise continually in the practice of the established Architect. Under each head some new fact offers itself every day, with which he should be acquainted in order to enable him to avail himself of the resources which Nature and Art offer to him, in the honourable and useful pursuit to which all his best energies must be devoted. Botany, geology and chemistry, (as connected with architecture,) construction, machinery, the properties of materials and their application, are endless sources from which subjects will be drawn to occupy the proceedings of the Institute. The theory and history of the Art, its rise, progress, and various fortune during successive epochs, it will also be useful to investigate, as well as the principles of invention in design. The discovery of a new principle in framing, the new application of a substance in building, the revival of an ancient mode of construction, arise continually, and are open to the observation and experience of all.

The Institute would therefore impress upon the minds of all the Members, and of every one connected with Architecture, the necessity of a zealous personal co-operation, and of their contributing somewhat to the mass of professional information, which it is the aim of the Institute to elicit and concentrate for the benefit of all.

THOS. LEVERTON DONALDSON,

HONORARY SECRETARY.

Rooms of the Institute,
43, King Street, Covent Garden, London,
July 1835.

CONTENTS.

QUESTIONS,

ETC.

Buildings.

THE date of the erection of any particular edifice.

Dates are of great value. Internal evidences may lead the enquirer to judge by approximation of the period in which any building is erected. But until we have more positive authorities, as to dates, of the erection of certain edifices, it will be difficult and almost impossible to decide the long pending question, as to the origin of the style of architecture now generally termed Gothic, and of its relative adoption or invention in England, France, or Germany. The point is still open to controversy, and will be so until some authentic records furnish the dates of the principal buildings, which assimilate in character in those countries *. In like manner, the origin and relative antiquity of the Egyptian, Indian, Chinese, or Arab architecture, and the question, as to which owes to the other any of its component features, cannot be ascertained, until we are in possession of that documentary evidence which may at once decide the question. Internal evidence may assist, but cannot effect the solution.

Motive of its erection.

Its present destination, also the names of the Architect and builder.

Cost of the erection.

* The gradual decline of Gothic, and the introduction of Italian architecture, has not, as yet, been clearly defined; this subject resembles the uncertainty of the transition series in the geological system.

A general plan, with its dependencies, such as surrounding courts, approaches, &c., and give the general dimensions of its width and length.

Give its general heights.

State the style of its Order of Architecture.

The materials of which it is built.

In the ancient buildings of Egypt, and many parts of Greece, several are constructed of a very rough stone, the surface of which has been covered, and the ornaments of which have been finished off with a coating of very fine stucco. The Parthenon, Propylea, and the Temple of Theseus, at Athens, although of marble, were painted, as were mostly the insides of our Gothic cathedrals, and the generality of the monuments within them. Many buildings have had alterations, additions, and restorations, since the original erection. It is desirable to note these several particulars, and to ascertain their causes, if possible, as also any variation which may have consequently occurred; its success, if occasioned by any failure, and also any alteration in the style or Order of the Architecture.

Give the titles of such works, whether ancient or modern, as describe or illustrate it, distinguishing those, which are considered to be most correct, and best worthy of belief.

The foundations of buildings materially depend upon the qualities of the soil. Thus Venice, Petersburgh, Amsterdam, Paris, and London, have different soils, and as different modes of constructing and forming the foundations. It is therefore extremely desirable to procure information upon the precautions adopted in different countries under peculiar circumstances.

Houses.

1. If the manners of the people are peculiar, and have influenced them in the arrangement of their domestic edifices, take plans of the different stories, and general elevations and section, to a fixed scale.
2. If in a foreign country, rather take one that is a good specimen of the general character, than one which is peculiar. If at home, the reverse is advisable, and any peculiar arrangement, admirable for its beauty or particular advantage, is preferable.
3. Attach to each room its name and peculiar destination, and give the length, breadth, and height of it.
4. Mark the aspect of the house.
5. The foundation, if peculiar.
6. *It is* also desirable to note the peculiarities, which in any

particular distinguish foreign countries, as the flat roofs in the East, and the Loggie in Italy; and to ascertain the reason of their adoption.

The residences of the ancient nobility in Scotland, England, France, Germany, and Italy are extremely interesting, and not sufficiently known. The details of one good specimen in each of these countries are requested. Of the first, Glammis Castle, the seat of Lord Strathmore, in Angusshire, which is in a good state of preservation, is a fine example, but due care must be taken to distinguish between the original and recent erections.

The arrangement and Architecture of the Baronial residences of the olden times, in France and Germany, require illustration, being unknown in England.

Staircases *,

Whether in houses, public edifices, or open situations accessible to crowds of people, are extremely interesting, and it is well to note the relation between the tread and the rise of the steps, and by repeated trials, to observe whether the ascent be easy or difficult.

There are numerous flights of steps at Rome, some of which are remarkably easy of ascent, others, although of less height, painful. Some have the treads not horizontal but inclined inwards, others outwards.

Ice Wells.

Give plans and section.

Shew the passage which gives admission to the Ice Chamber.

—— the manner in which the drains are disposed, so as to carry off the water from the bottom.

Prisons, Workhouses and Hospitals.

Give the length, height, and breadth of the distinct cells.

—— the precautionary means, if any, adopted for ensuring the safe custody of the prisoners.

—— the peculiarity, if any, of the access to the prison.

The sizes of the wards, and number of beds in each.

The cubical quantity of feet allowed to each bed.

GENERAL PARTICULARS.—The size of the work chambers.

The means for ventilation and for heating.

* There is much useful information on this head, in the second volume of Milizia's Architettura Civile, Parte 2, Lib. 3, Cap. V. Div. 9.

Stabling.

The details of any arrangement of stabling admirable for its completeness are requested; shewing with minuteness and accuracy—

The Mangers.
— Racks.
— Drains.
— Mode of ventilation.

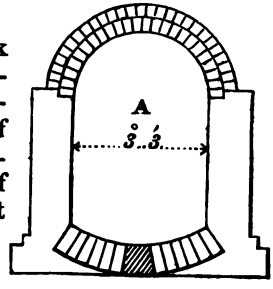
Sewers.

There is hardly any subject more important to the practical man than the mode of sewage adopted for the relief either of a building or a city. It is therefore extremely valuable to ascertain the following particulars—

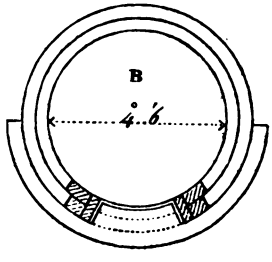
The size or section of the sewer at various points from the commencement to the outlet.
The average current or fall of the sewer. Whether the fall be regular or varied.
The number of acres relieved; or the size of the district.
The average fall of the greatest showers in the district.
The number of houses in the district.
The average quantity of water supplied to each house in the year.

In London the section for the sewers adopted by the several commissions is very different.

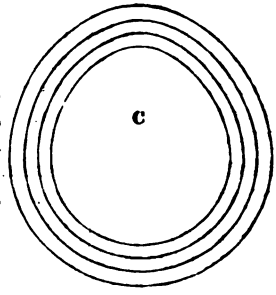
In the Westminster and Middlesex commission the section usually employed is that of Fig. A., it being observed that the arch is in two half brick rings; the invert on the contrary one whole brick, with a key of granite, or composed of lumps put together in cement.



The section used by the commission for Surrey and Kent is that of a complete cylinder, formed of half brick rings. In cases of necessity, arising from a sandy foundation, a cast iron invert, as shewn, is adopted; the four courses of brickwork immediately adjoining it being in *cement.*



The sewer constructed by Mr. Nash in Regent Street, was egg-shaped, and consisted of three half-brick rings, as Fig. C.; where the width was six feet in the clear, the height from the bottom to the top was only six feet six inches.



Practical observations upon the relative properties of these several forms of sewers, are very desirable.

Note any good precaution for preventing the smell from rising into the houses from the sewers and drains, as stink traps, &c.

Bridges.

The plan, shewing the total width without and within the parapets, and widths of the pathways and coach-road.

Give also the total length of the bridge, with the form and extent of the approaches.

Give the elevation of one of the sides, figuring the spans and rise of the arches and widths of the piers and abutments.

Mark the depth of the stream. The greatest rapidity of the current. The difference between the high and the low tide.

Describe the species of arch. Take, if possible, the depth of the key-stone and springing-stone, and lines of extrados and intrados, if ascertainable.

——————————— State the materials of which it is constructed.

State the distribution of weight upon the crown and haunches.

The construction of the piers, spandrils and abutments, whether solid or not.

The nature of the foundations, whether piled.

Has any peculiar mortar or cement been used for the constructions under water?

Procure if possible a representation of the framing of the centering with the scantlings marked thereon.

Suspension Bridges.

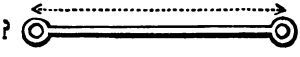
The chord line or distance between the points of suspension.

The deflection of the chain.

Breadth of waterway from pier to pier.

MAIN PIERS.—Their height above the level of the roadway.
Width at the level of the roadway.
Depth from back to front at the same level.
Width and depth at the ground line.
Depth of foundation.
Height and breadth of the openings through the piers.
Material of which built.
Style of architecture.

ROADWAY.—Breadth of the platform and structure.
Are the cross bearers in cast or wrought iron or wood—if the latter, of what description.
Give their scantlings and the distance between the points where the suspension rods are attached to them.
Scantlings of the side-beams, if any, and state whether they are trussed or not.

MAIN CHAINS.—How many, and of what material. Iron? wire? rope?
The number of bars or wires in each.
The form of the bars.
Cross section of each bar, or number and size or diameter of wires.
Length of each bar from eye to eye? 
Were the chains proved* ?
What weight did they bear per ton, without any stretching?
How are they supported at the points of suspension?
Are they on fixed saddles, or on saddles placed on rollers?
Or do they pass over rollers, the pivots of which lie on bearings? In the latter case give the dimensions of such rollers, and particularly of their pivots or necks. 
The angle of direction of the backstays, and are they stronger at any part than the chains?
How are the ends of the main chains fastened in the abutments? Do they change their direction and go down into wells, or do they go through tunnels? The sizes of the washer or holding plates through which they go.

ABUTMENTS.—Their three dimensions in order to give their cubical contents.
Their material.
Depth of foundations and nature of soil, whether rocky, &c.
Strength of the main holding bolts.
their length between the bearings.
———— in the bearings.
diameter.
material and shape.

Int there is a deficiency of practical information. It is import-
's Susp. Bridges, p. 202. Note.

Diameter of the suspension rods.
How are they fastened to the chains and to the bearers of the road?

What is the weight of the main chains?
——————————— keys, pins, suspension rods, &c.?
——————————— platform * ?
Observe the oscillation of the bridge.
——— the mode adopted for preserving the iron from oxydation.
——— with what success, and how often applied.

Chain Piers.

Get the numbers and sizes of the piles and their distance apart.
How lashed together?
Whether loaded with heavy layers of stone, &c., or not.
How are the ends of the chains fastened?
Whether to piles? or to anchors?

N.B. The other queries are the same as those for suspension bridges.

Bricks and Tiles.

The qualities of the different sorts of bricks used in a district.
The purposes to which they are applied.
The nature of the earth from which they are made.
The mode in which they are made and burnt.
Is the clay washed?
Is the clay passed through a pug-mill?
Their forms and sizes.
Their weight when dry, and when saturated with water.
The color of the bricks, tiles, and the mode by which the color is produced.
The price per 1000 in the field.

Stones, including Marbles, Slates, &c., &c.
In Buildings generally.

Observe what and how many kinds of stone are used in their construction.
——— ——— for foundations or footings.
——— ——— for the external walls.
——— ——— for sills, cornices, and other carved dressings.
——— ——— for rustics.
——— ——— for paving.
——— ——— for roofing as slate.
——— ——— for interior decorations.

* These three data give the total weight suspended between the points of suspension.

Remark whether they have been set in their beds.
Note their names in the language of the people who work them, and, where it can be discovered, not only of the quarries from which they were supplied, but the individual parts of the quarry.
—— how far have they stood the test of time and exposure to the action of the weather, water, and frost, and their subsequent discoloration by mosses or by oxydation.
Note the sizes of the largest and of the ordinary stones.
—— the color of the stone when fresh.

Stone, when in the Quarry.

Observe the mode in which the stone is extracted.
——— whether the blasting or other process be parallel with the stratum or bed, or at right angles to it.
——— whether the stone is got out for rough materials as in lime quarries, or with disregard to the material as in tunneling and removing obstructions.
——— the quantity removed by one or any given number of men in a stated period.
——— the size of the largest and also of the ordinary sized blocks extracted.
——— the change which takes place when exposed to the air.
——— whether it be usual to work up the stone in construction immediately after its extraction from the quarry, or if it be customary to expose it previously to the action of the air.
——— the several qualities and prices of the stones used for economical purposes.
——— the distance and mode of conveyance, whether by canal, rail road, &c., &c.
——— the purposes to which generally supplied.
——— the principal building to which the stones from the quarry have been supplied.
When a new quarry is opened, the quality of the stone is not to be inferred from analogy, but must be subjected to the test of experiment; for the same bed, geologically speaking, varies greatly in quality sometimes in the same field.
Ascertain by the most approved methods:
———— the composition of the stone.
Ascertain by its specific gravity.
————— hardness.
————— roughness.
————— tendency to split or part with its angles.
The form of its blocks.

The evenness of its texture.
Its proneness to oxydation.
The effects produced by exposure alternately to heat and frost; drought and moisture.

Specimens are requested. Cubical masses of the size contained within these lines, are the most convenient to the Institute.

When a specimen cannot be sent, it is requested that the geological features may be defined as accurately as possible, for which purpose the following heads are suggested.

1. Composition as regards the parts.
   ——— their nature.
   ——— their predominance.
2. Structure and disposition of the parts,
   whether granulated.
   ——— mixed.
   ——— foliated.
   ——— impasted.
   ——— cellular.
3. Cohesion, whether solid.
   ——— friable.
   ——— tenacious.
   ——— crude.
   nature of cleavage.
4. Fracture, whether united.
   ——— rough.
   ——— granular.
5. Hardness.—Sometimes all the parts of a rock are nearly of the same degree of hardness. If its parts combine the necessary conditions, as porphyry, it is susceptible of receiving a fine equal polish. But frequently the parts are of unequal hardness, and this difference is apparent from the uneven appearance of the polish.
6. Colour and play of light—as a whole.
   —— in its parts.
   —— brilliant or sparkling (as mica in granite.)
7. Chemical action. State of oxydation.
   —— with respect to water.
   ——————— acids.
   ——————— fire.
8. Natural susceptibility of alteration from the atmosphere.
   ——————— frost.

Attention is called to the process discovered by Monsieur C. P. Brard* for ascertaining the liability of stones to resist frost by the application of salts.

Ascertain its mode of alteration,
whether by losing its aggregation.
———— by decomposition.

9. Mineralogical passage and dip, or inclination of the bed with the horizon.
10. Its strength when exposed to pressure.

It is extremely desirable also to ascertain the specific gravity of a cubical mass of a given size. If the information comes from abroad, it is suggested that the mass weighed should have all its sides equal, as for instance, bounded by the longest line given above. Its weight should be ascertained by water contained in a vessel, the size of the bottom of which should be defined by the same length of line, and the height noted in reference to the same line, whether four, five, or six times, &c., as the case may be.

Mortar.

1. The material from which lime is procured, whether stone or chalk.
2. The properties of the stone or chalk.
3. The mode in which it is burnt.
4. The price of lime per load of bushels at the kiln.
5. The sand used, whence taken, whether from pits, beds of rivers, roads, or sea sand; of what sort geologically. Whether washed before used.
   In what proportions compounded with the lime.
6. Observe the peculiar qualities of the mortar when mixed: —as whether it has the quality of hardening under water, as the lime from Lias and the Devon blind lime.—Or its fitness for malting-floors as when used in Devonshire, Somersetshire, &c., &c.,—a description of which would be very desirable.
7. Describe the plaisters used inside buildings, and their relative proportions.
8. Also the different kinds of cements and mastics.

Timber.

1. Describe the different sorts used in construction, and the particular purposes to which they are peculiarly applicable.

* Rapport fait à la societé d'encouragement pour l'industrie nationale sur le procédé proposé par M. C. P. Brard, pour reconnoitre immediatement les pierres qui ne peuvent point resister à la geleé et que l'on designe ordinairement par les noms de pierres gelives ou pierres gelisses. Paris, 4to., 1824.

2. The qualities of those grown in your neighbourhood, and used in buildings.
3. Whether they are subjected to any particular process for seasoning or drying, or for protection from dry rot, teredo navalis, &c., &c.
4. Whether they are used in exposed situations in buildings or under cover.
5. Whether they are painted when used externally, or left to the action of the weather without a pigment.
6. ——— they resist ready ignition, as poplar.
   ——— they possess great durability, like larch.
   ——— they are liable to the worm, as beach, pear tree.
   ——— they are particularly subject to the dry rot.
7. Whether peculiarly fit for under-water construction.
8. Whether liable to destruction by the teredo navalis.
9. How guarded from destruction.
10. Are there any trees of remarkable size in your neighbourhood? If so, state of what kind, their ages, their height, their girt, and if possible, the total number of cubical feet in each.
11. The scantlings of timbers used in construction, giving the span and weight to be sustained. In England the practice is to give a greater depth to timbers than width. In France, and generally in Italy, the timbers &c. of floors and roofs are die square. Take examples of framing, as trusses, partitions, floors,—also trussed girders, principals of roofs, and indeed roofing in general.

Iron.

Attention is drawn to the application of iron in the construction of buildings, whether employed wholly, or merely partially, as in

Bridges, such as the Southwark Bridge.
Jetties, quays, and embankments.
Buildings, when introduced for story-posts, brestsummers, girders, principals of roofs, framings and floors; also in plates for covering roofs, as in the London University and St. George's Hospital; and floors and ceilings in fire-proof constructions.

Construction in general.

Note any peculiar construction in walls:
Such as dock walls.
Hollow walls.
Quay walls.

Note in any solid vaultings—
The span and rise of the arch.
—— thickness.
—— material of which built.
—— nature of abutment.

Observe the materials of which cramps, dowels, and plugs are composed, and their forms.
——— their mode of application.
——— the flux used, whether lead or cement.
——— the effects produced by them.
——— the effects produced upon them.

In stone constructions observe whether the blocks are joggled.

Information is requested as to the best precautions adopted for preventing the damp of foundations rising up the walls of buildings, as by a layer of thin lead just above the footings, or a course of brickwork in cement.

Scaffolding and Machines.

Give drawings and particulars of any peculiar scaffolding, crane, pugging-mill, or other machine, used for building purposes.

Sometimes machinery is attached to a small moveable steam engine, for the purpose of raising bricks, stone, mortar, &c., as at the Custom House at Liverpool.

Collect also information upon the expedient used in some places, of making the laborers go up the ladder unloaded, and of raising the materials by their being let down in a bucket, their own weight answering the purpose.

If a tower, shaft, or obelisk has been constructed, whether with or without scaffolding, it is very useful to observe the mechanical means adopted.

A drawing of the "Bascule," by which the statue of Napoleon was recently elevated to the summit of the Colonne Vendôme, is wanted. The scaffolding for a similar object, the raising of the Duke of York's statue to the top of the Column, is given in detail in the Architectural Magazine published by Loudon.

Any new, or particularly good combination of shoring up buildings, for the purpose of reparations or alterations, is desirable: as also the mechanical means by which houses are sometimes, as in America, transported bodily from one spot to another.

A scaffolding of basket work was constructed for repairing the steeple of Islington church, about thirty years since; can any account be obtained of it?

Ventilation and Heating.

CHIMNEYS.—Whenever a chimney smokes, it is desirable to ascertain the size of the apartment.

——— the relative position of the chimney and the several doors and windows.

——— a section of the flue.

——— the sort of grate used in the fire-place.

——— the form and size of the pot.

——— the relative position and heights of the roofing immediately adjoining, and of any lofty houses or trees near.

The description of any successful applications of *hot air*, *steam*, and *hot water*, for the purpose of heating buildings, is requested: the process and arrangements being as fully detailed as possible.

Acoustics.*

Our knowledge of the application of the Laws of Sound to Buildings is as yet very imperfect. Some buildings in Europe are admirable for their conveyance of sound, as for instance, our Italian Opera House, and the Theatre of "La Scala," at Milan, but whether this result be produced by the form, the disposition of the parts, the application of peculiar material—whether it arose from design or chance, is not known. There are many theatres less in extent in which the voice of the singer or actor is heard less distinctly.

The attention of travellers is called to the *echea* or sounding vases used in the ancient theatres, as mentioned by Vitruvius. Any illustration or instance of this fact would be valuable, if properly authenticated.

Note the size of a room, hall, or other apartment remarkable for its admirable conveyance of sound with transverse and longitudinal sections.

—— the form of the ceiling, whether flat or vaulted.

—— the several projections, such as cornices, architraves, or pilasters, &c.

—— the apertures.

—— the materials of which the room is built.

—— the mode in which the floor, ceiling, and walls are finished off.

If there be a large niche in the room, let a person be placed in it, and note the distinctness of his voice when heard

* The following are useful works of reference on this subject. Saunders' Treatise on Theatres, including some experiments on Sound. 4to, London, 1790.—J. G. Rhode, Theorie des Verbreitung des Schaller für Baukünstler, Berlin, 1800.—Chladni Traité d'Acoustique, § 203—210. Paris, 1809.—Sir J. Herschel's Treatise on Sound, in the Encyclopedia Metropolitana, 4to.

from different parts, and at different heights of the room, hall, &c.

Place yourself in the niche, and observe the effect of a person speaking in different parts, and at different heights, of the room, &c.

ECHOES.—It would be well to ascertain the precise data of celebrated echoes, such as those of the Dome of St. Paul's; the niche-headed recesses on Westminster Bridge; in the Gallery over the East Choir of Gloucester Cathedral; in St. Alban's Abbey; on the Claudian Aqueduct at Rome, and in the Prison of Dionysius at Syracuse; the one at the Villa Simonetta near Milan, described by Saunders; the one in the Cathedral at Girgenti: all of them in buildings. But there are also some in open situations, such as that near the Circus of Caracalla and the Tomb of Cecilia Metella, Rome. The investigation of these might produce important results, which might lead the Architect to construct his halls, courts of law, churches, parliament houses, with every facility for carrying the voice of a speaker to the remotest parts, and preventing the sound from being disturbed by the echo.

Light.

Another useful subject of investigation is the light in edifices or single halls, rooms, stair-cases, &c.

As a preliminary matter it is necessary to note the climate and the intensity of the sun's light, as of course the size of aperture, necessary to produce an equal quantity of light into a room of a given size, varies according to the climate.

Mark the cubical volume of the apartment.

—— its aspect.

—— the position of the windows, whether on the side or at the end of the room.

—— the height of the bottom of the windows from the floor.

—— the height and width of the apertures, and whether they are splayed.

—— whether the ceiling is flat, vaulted, or waggon headed, &c., &c.

Remark particularly the purposes for which the room is intended. In a picture gallery the light is always most judiciously introduced from the ceiling; but in museums, with glazed horizontal cases, the objects cannot be distinctly seen unless the light enters from the side.

Some underground cellars, which have one or two openings at the end, and some ill-lighted offices in the city of London, have reflectors of tin or other polished *metal,* and sometimes of glass, to throw light into the

distant parts. Note these particulars, and the angle of inclination at which placed, and the distance to which they cast light.

On Failures, and their Remedies.

Much more is frequently learned by a failure than by the most complete success. An unexpected difficulty and unforeseen obstruction may arise and attend each step of construction without implicating the foresight, intelligence, or ability of the Architect. Nothing is more useful in science than experiment; but before the precise nature of a new application can be ascertained, many failures will attend the experimentalist. Iron, as a principal in framing, has involved many an Architect in difficulty, and several roofs, floors, and bridges, have failed ere the properties of the material were known, both at home and abroad. It would be well to ascertain whether such failures arose from imperfect material or manufacture, want of proportion, or any other defect in science.

The hopes, the fears, the dangers and the triumphs which attend a critical work are numerous, and of interest not only to the Architect but to those who are made acquainted with them, and convey at once a moral as well as a scientific lesson.

The obstacles and hindrances which arose, and which were successively overcome by Smeaton, during the progress of the Edystone Lighthouse, are minutely recorded by him, and raise our estimation of his genius and resources. Every principal engaged in the construction of an important work, should keep a regular record of each event that occurs, with as much precision as the statement of cases kept by medical men in hospitals. Some circumstance may arise, to render reference to the notes of even minute circumstance (particularly in the foundations) invaluable. And if the substructions be carried low into the soil, the depths of the various strata of gravel, sand, clay, peat, or other deposits, should be noted with their several thicknesses.

Specifications and Contracts.

It is very desirable to procure, as precedents, copies of the specifications by which buildings have been constructed, as also the forms of contracts. The specifications are extremely useful, as containing the peculiar terms in use, and are frequently explanatory of the different species of work, and mode of execution.

Antiquities.

The details of ancient edifices have been of late years illustrated with considerable minuteness and accuracy, and have been highly beneficial. But sufficient attention has not hitherto been paid to the combinations of plan, shewing the relative parts as dependent upon each other, and it is therefore recommended that the "*Ensembles de Plan,*" in ancient edifices, should be particularly studied, shewing the relation of parts with each other, and again, the accordance of buildings with those immediately contiguous.

It is not to be supposed that entire lines of wall, which once circumscribed a building, always remain above ground, or are easily distinguishable; but sometimes a ridge of earth, or a heap of stones, may guide an intelligent mind or experienced eye, and suggest the completion of a plan. In many ancient cities this frequently occurs, and at Athens, Delphi, Ephesus, and Halicarnassus, little remain of some buildings, but mere indications of sites, and indistinct series of lines. But with Strabo or Pausanias in his hand, and standing upon an elevated position, the judicious Architect may trace the sites of ancient edifices. The several ports of Miletus may thus be defined, and frequently, such leading features being decided, the minor points are more easily assignable. Many of our conventual buildings, as Fountains Abbey, in Yorkshire, may thus be traced, and present beautiful combinations of plan.

Remark whether an edifice be constructed of materials entirely new, or derived from the ruins of previous ones.

The latter circumstance occurs in many erections of the Romans, as in their triumphal arches.

An arch of the Stadium of Ephesus is composed of the spoils of another building, and some of the blocks, forming the construction, and exposed to view, discover inscriptions of a remote period of great value. The citadel wall of Athens on one side, is mainly composed of the shafts of columns, and fragments of entablature, ruins of the original temple of Minerva destroyed by the Persians, which were worked up, when the Acropolis wall was rebuilt by Themistocles. The proportions are much simpler, and upon a grander scale than those of the Parthenon of Ictinus. The dimensions are given by Mr. Jenkins, in the supplementary volume to Stuart's Athens, published by Weale. Sometimes a modern dwelling in the neighbourhood, or even remote from the site of an antique one described by ancient authors, and not one stone of which may remain in its original place, contains fragments, *that may give* the scale of its size, or perhaps supply some *deficient member.*

Bas-reliefs and other sculptures occasionally contain architectural buildings. No. 4, Room III., of the Towneley Collection in the British Museum, is a bas-relief, the background of which is occupied by the representation of a temple, hung with festoons, and having two-light windows divided by a pilaster. The tiling of the roof is very distinctly marked. There are also many other objects of architectural embellishment in the foreground.

The fictile vases of the ancients are all rich treasures of architectural illustration, and may afford valuable hints for original ideas, not only for buildings, but also for combinations of foliage and enrichment, well worthy attention. In fact the elements of design, as developed in the vases and sculptures of the ancients, would afford a very interesting subject of investigation.

Another source of information is ancient coins and medals, which frequently represent upon the obverse some building, the erection of which they are designed to commemorate. Series of these have been chronologically arranged at Rome, and sold in sets. From them Piranesi and other architectural writers have derived authority for the restoration of many ancient buildings.

The physical phenomena connected with the temple of Serapis at Pozzuoli, have recently occupied much of the attention of the Geological Society. Mr. Babbage is of opinion, that the site on which this remarkable temple stands, has since its first erection both subsided and risen again: his enquiries have been intimately connected with the present features of the constructions. In the address delivered at the anniversary meeting of that Society, 20th February, 1835, G. B. Greenough, Esq., the President, suggests to future visitors of this temple the following topics of enquiry; which, being so immediately within the province of the Architect, are here inserted.

"What parts of the building have undergone repair? Can the date of these repairs be deduced from the nature of the materials employed, or the character of the workmanship?

"Where is the pavement out of level, and to what amount? Are the subsided parts under the lines of thoroughfare, or can their sinking be traced to imperfect construction? Is the foundation such as an architect would call secure? Does it stand on stratum No. 6 of Mr. Babbage's section?

"Were there roofs to the bath-rooms?

"Would the fragments No. 6, 7, 8, form one column, or more than one? Was the original number of large (*cipollino*) columns greater than four?

"Is the tufaceous deposit on No. 7 the same as that on the walls?

" Are all the water lines horizontal?

" Brick-work is found in the strata which buried the temple. What is the character of this brick-work? Is it reticulated?

" Draw up a detailed and exact account of the strata.

" What is the nature of the thermal spring? Evaporate a few gallons of the water, and send the deposit to the Society.

" The plan which accompanies Mr. Babbage's paper being copied from that of Jorio *, it is desirable, in order to prevent confusion and save expense, that this plan, with the numbers attached to it, should be adopted in any future description."

Indian and Hindu Architecture and Antiquities.

N.B.—The following questions are taken from the " Desiderata and Enquiries connected with the Presidencies of Madras and Bombay," originally compiled by Dr. Benjamin Guy Babington, and republished by the Asiatic Society in 1832, 4to.

" A translation or abstract of the *Silpa Sâstra* †, and some exposition of Hindu Architecture, including particulars of the building materials in use, especially the preparations of the various kinds of *chunam* and cement.

" Details regarding the building of pagodas, forts, palaces, bridges, dykes, &c., with the dates of their erection.

" The pagodas of Tripatty, Trincomalee, Chillambram, Cánjipuram, Seringam, and Rámeseram, are particularly worthy of notice; and among the most remarkable forts are those of Gingee, Vellore, Chandernagore, Seringapatam, Pennakonday, Trichinopoly, Dindigul, and Palamcottah, with the durgass or hill-forts in the Baramahal, the Mysore, the province of Canara, &c.; many of these are supposed to be very ancient. The works of Gingee may be instanced, which, with any particulars of the former governments of that place, would of themselves form a subject of curious inquiry.

" The pagoda and town of Shiva Samudram, near the falls of the Cavery, deserve particular description.

" A drawing of the bridge thrown over the Cavery at Seringapatam by the Dewan Poorneah, and called the 'Wellesley bridge,' with an account of the manner of its erection and its dimensions, would also be highly interesting.

* It is to be observed that this plan was measured and delineated by Monsieur Caristie, the author of the well known plan of the Roman Forum, and whose accuracy is beyond a doubt.

† *The treatise* on Hindu Architecture by Ràm Ràz, published by the Asiatic *Society, 4to, London,* 1835, is the first regular work on this style, and is *extremely interesting.*

" The Hindu province of Tanjore escaped entirely the ravages of Mahommedan fanaticism, and all its institutions, religious and domestic, exist at this day in their original state. An authentic account of the magnificent temples in the fortresses and towns of Tanjore, Combaconum, Mayáveram, Trivalore, Manargoody, and Andiarcoil, would be extremely valuable. The sculptures in the temple of Andiarcoil are particularly recommended to attention."

" With respect to the *Sepulchral Monuments*, it is desirable to ascertain whether there are any ancient capitals of sovereigns in their vicinity, to whom they might have served as burying-places. Some observations on the nature of the ground, and surrounding localities, will be useful in determining whether they were family tombs of dynasties, tombs of particular tribes or castes, the common sepulchres of large communities, or structures erected in commemoration of the slain in some remarkable battle.

" Do any of the stones employed in building these sepulchral monuments appear to have been chiselled? Are the quarries near that supplied them, and do they seem to have been constructed by the labour of numbers, hastily collecting rude materials, or by workmen who had leisure to erect more elaborate structures.

" Are there any circles of stone, great or small, surrounding these tombs, or any single stones of superior height and size, that might have been erected as particular marks or trophies?

" Inquiries are suggested among intelligent natives, relative to the traditions, &c., regarding these structures. The class of *Vaidias*, or native physicians, the *Jotishes*, or astronomers, and frequently the head Ryots of villages, are recommended as the most intelligent and unbiassed sources of information."

The Literature of Architecture.

This is a department which will not be neglected by the Institute; consequently every thing connected with the illustration of Vitruvius, our great classic author, will be fully appreciated, as well as every information which may lead to the better conception of those valuable descriptions of Grecian buildings, which are contained in the Itinerary of Pausanias.

The works of Sir W. Gell on Greece, and those of Colonel Leake upon Asia Minor, will point out to the traveller the sort of information which is desirable. The ruins of Pompeii are the best illustrations of the chapters of Vitruvius upon the domestic edifices of the ancients,—first reduced to a regular system by Mazois in his noble work of the "*Antiquités de Pompeii*," and wrought out into a narrative at once pleasing and instructive, in his "Palais de Scaurus."

The architect, therefore, who travels on the classic soils of Antiquity, will derive advantage from reference to those works of the writers of old, which more especially treat upon ancient buildings.

It will be well to ascertain the several editions of Vitruvius preserved in public foreign libraries; such as those of France, Germany, or Italy, and accurately record—

The distinctive mark or number in the library.

—— date and place of its publication, which, in the older editions, are to be found at the end of the volume.

—— name of the editor.

Remark its condition or state of preservation.

The best modern edition of the text of Vitruvius is that of Schneider, 3 vols. 8vo, Leipsic, 1807–8.

If the traveller meets with a manuscript copy of this author, the peculiarities should be noted in the following manner:

"MS. of Vitruvius at Oxford, Bodleian Library, marked Auctar $\frac{F}{5.7.}$

"This is the only one, that appears to be preserved in this library, although James in his MSS. of England and Ireland enumerates two. This codex was bought in London by the present librarian about the year 1820, at the Abbé Celotti's sale: it is in excellent preservation, and although it has no date, it appears to have been written in the 16th century. It is the sole subject of a quarto volume, written on vellum in single columns on each page. The capital letters to the heads of books and other divisions are large, written in blue and red colours, and some illuminated with gold. The C of '*Cum divina tua mens*,' at the very commencement, is embellished with a coloured half figure of a person in a scarlet cloak reading a book. The text appears to have been written by two or more scribes at different periods, the two first books being in a larger character than the eight last: there is usually a hair stroke (') over the 'i', but frequently no mark at all, and the diphthong 'œ' and the letter 'e' are both written e. The abbreviations are frequent, in fact to almost every *word*.—Many of the numbers expressed by words in

the most ancient copies are in this codex written with numerals. In the description of the contraction of doorways an omission occurs of the words "*IIII. Si a pedibus* XXV *ad* XXX *summa pars contrahatur antepagmenti parte.*" The codex numbered 7541 by James as being in the Bernard Collection, the greater part of which is in the Bodleian Library, is not now to be found there."

It is generally considered that the ancient copies of Vitruvius contained diagrams in illustration of the text, but none such have yet been found in any copy hitherto discovered.—A MS. may exist, however, of such a nature, and, if so, would be extremely valuable.

There must be vast collections of original drawings by former architects existing somewhere, and we know that at Oxford, All Souls College possesses some fine ones by Wren, the Bodleian, many by Gibbs. In the Duke of Devonshire's villa at Chiswick, are several original drawings by Palladio and other masters.

It is said that there are some very interesting drawings by Palladio in the possession of an Italian at Verona.

In the print room of the British Museum are some very fine architectural drawings, presented by the Dilettanti Society. Complete lists of all these are wanted, as they might prove of incalculable benefit to the biographers of the men, whose drawings have been alluded to.

The titles of modern works, not generally known, are also desirable, with remarks upon their scope and tendency.

This will be peculiarly desirable in works of local interest, descriptive of the buildings in any particular place. Thus the antiquities of Syracuse have been considerably elucidated by Capodieci, and those of Catania by Ittar, the companion of Lusieri at Athens. The limited means of these authors, did not admit of that sumptuousness and pomp of publication, which distinguish the tomes of Stuart and the Dilettanti; consequently their circulation is limited, but their importance no less. Such would, therefore, be valuable acquisitions to the library of the Institute.

Biography.

The attention of correspondents is requested, in procuring information respecting architects, now living and practising, whether in England or elsewhere; or of those who are dead, and of whom no published memoirs exist.

The year of their birth, or their presumed age.

The city in which they reside.

The master under whom they studied.
Whether they have travelled in Egypt, Greece, or Italy.
The buildings which they have constructed.
The works written or published by them.
The style of art in which they excel, whether Greek, Roman, Gothic, &c., &c.

History.

Allusion has already been made to the internal evidences, which may lead the architect to arrive at a very near approximation in fixing the dates of buildings. But there are other circumstances connected with edifices, which can only be appreciated by ascertaining the motives, which have influenced their erection, or the peculiarity of the style of architecture, and by studying the local history of the people.

Thus the frowning palaces of the Florentines, and the profusely ornamented residences of the merchant princes of Venice and Genoa, originate in the character of the people. The internal commotions of the former, and the commercial opulence of the latter, determined the style of decoration and arrangement of the parts. The mixed and indefinite style of the architecture of Modern Rome arises from a similar cause. Its artists having been rarely natives of the city, but settlers from other Italian towns, each introduced the character of the Architecture of his native place. It is therefore desirable for the Architect to investigate the several sources of each variety of style.

Education.

It is desirable to procure information upon the systems of Architectural education pursued in foreign schools and academies, with a list of the professors occupied in the instruction of the students, and the subjects and order of the courses of lectures delivered during the year.

It is also useful to ascertain the nature of the prizes offered in competition—to procure some of the programmes of subjects given out—to describe the course pursued in adjudging the prizes, and deciding upon the merits of the designs and drawings; and the regulations for the admission of students.

Also the number of students sent to Italy or Greece.

The regulations connected therewith, as to their length of absence, the allowance made them per annum, and the obligation, if any, for transmitting drawings to the academy or state by which they are sent abroad.

G. Woodfall, Printer, Angel Court, Skinner Street, London.